DOCUMENT RESUME

ED 259 707 IR 011 739

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| TITLE | Learning Technologies and Telecommunications in New York State: Action Recommendations. |
| INSTITUTION | New York State Education Dept., Albany. Center for Learning Technologies. |
| PUB DATE | 24 May 85 |
| NOTE | 14p. |
| PUB TYPE | Reports - Evaluative/Feasibility (142) |
| EDRS PRICE | MF01/PC01 Plus Postage. |
| DESCRIPTORS | Educational Facilities Improvement; *Educational Objectives; *Educational Quality; *Educational Technology; Equal Education; *Instructional Improvement; Instructional Materials; Professional Development; *Statewide Planning; Teacher Education; *Telecommunications |
| IDENTIFIERS | *Excellence in Education; New York |

ABSTRACT

The Learning Technologies and Telecommunications Action Recommendations proposed in this document for New York State are related to three major goals for cultural and educational institutions: (1) excellence--interactive learning technologies and telecommunications should be used to achieve quality within the New York educational system and applications should reflect the highest standards; (2) equity--technological resources, including the information conveyed by those technologies, must be available to all on an equitable, nondiscriminatory, and nonstereotyped basis; and (3) efficiency--use of technologies should be employed to achieve better use of educational resources and enhanced professional effectiveness. Barriers to the use of technology are listed, such as institutional concerns, inadequate staff development, lack of adequate software, and skepticism about long range results. A statement of the commitment of the New York State Education Department includes 15 action recommendations for using and fostering use of learning and telecommunications technologies. Also stated are the specific responsibilities of the Office of Elementary, Secondary and Continuing Education, the Office of Higher and Professional Education, the Office of Cultural Education, and the Office of Vocations Rehabilitation in promoting the development of technology in their respective areas. (JB)

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# Learning Technologies and Telecommunications in New York State:

# Action Recommendations

APPROVED BY THE BOARD OF REGENTS ON MAY 24, 1985

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## I. INTRODUCTION: THE CHALLENGE

Modern society is undergoing profound technological and social changes brought about by "the information revolution." The revolution is characterized by explosive developments in electronic information and other technologies and their transformation into complex systems that span the globe. The impact of this revolution affects individuals, institutions, and governments. If individuals are to thrive economically and socially in a world shaped by these technological developments, they must adapt through education and training. The challenge facing us is the need to define new strategies to enable educational and cultural institutions to respond to these changes and to ensure that technological resources including information conveyed by these means are equitably distributed.

The Learning Technologies and Telecommunications Action Recommendations proposed in this document for New York State are responsive to the need for renewed quality and standards in our educational system, for the preservation of access to technological resources for all groups, for economic revitalization of the State through appropriate education, and for using the research and investments made in other sectors for the expansion of learning to educational and cultural institutions. The Department is proposing a series of initiatives to meet these challenges. At the same time, these initiatives address the institutional and societal barriers which could prevent technology from serving its vital role in the Learning Society.

The action recommendations are related to three major goals:

Excellence

Interactive learning technologies and telecommunications must be used to achieve quality within our educational system and the applications must reflect the highest standards.

Equity

Technological resources, including the information conveyed by these technologies, must be available to all on an equitable, nondiscriminatory, and nonstereotyped basis.

Efficiency

Interactive learning technologies and telecommunications must be employed to achieve greater efficiency in the use of educational resources and enhanced professional effectiveness.

It is important to acknowledge that the four major Program Offices of the Department have emphasized the importance of these goals in their recent planning efforts. Therefore, only a brief indication of the implications of the technologies for achieving excellence, equity and efficiency in the context of these plans and Regents initiatives is presented in this document.

The actions recommended in this document have been derived from a study of key technology issues relating to research, staff development, telecommunications, integration and quality of multi-media materials. These issues are as follows:

o Research and Development

Research and development activities must address the application of the technologies to meet the needs of education, the importance of a variety of means of disseminating information about technology to field constituencies, and the need to conduct systematic evaluation of interactive technologies to ensure appropriateness and effectiveness.

o Professional Development

The most important guarantee that the learning technologies and telecommunications will be appropriately integrated within schools, museums, libraries and other cultural and informational programs, colleges and universities, adult educational centers, and vocational rehabilitation sites is the adequate provision of effective preservice and inservice training to students, professionals, and other staff. This issue addresses the need to implement effective staff development programs on both the instructional and administrative uses of the learning and telecommunications technologies. Professional development must also include a planning component for the most effective use of learning technologies.

o Quality Instructional Materials

There is growing evidence that the current availability of high quality learning technology materials is inadequate. This issue concerns the need to enhance the quality of learning technology resources and to ensure that there is a close match between curriculum priorities of the State Education Department and the content of computer or other interactive programs

o Telecommunications

Electronic networks have the potential to achieve the goals of equitable and enhanced delivery of educational and cultural resources with increased efficiency and cost-effectiveness. However, the rapid evolution of telecommunications systems, the continual deregulation of rates and laws, and the existence of "untapped" capacities, require that greater attention be given to planning a comprehensive telecommunications system to support the educational and cultural enterprise.

o Technological Integration

It is necessary to integrate technologies within the content and program areas of the educational and cultural institutions to ensure that they are effectively used. At the same time, new developments in

the industry require that the technologies themselves should be integrated to effectively capitalize their collective strength.

The Center for Learning Technologies has two central functions to ensure that the Department's learning technology action recommendations are implemented across the major Program Offices of the Department and across the major educational, cultural, and industrial sectors of the State.

o First, the Center will coordinate the further development and refinement of the Department's recommendations and plans by cooperating with the four major Program Offices. The intra-Departmental Learning Technologies Task Force will serve as the mechanism for ensuring that all recommendations address the vital needs of Department Offices.

o Second, the Center will continue to foster effective alliances between educators and producers in support of Regents initiatives for revitalizing the economy of the State. Concurrently, the Center will continue to serve an integrating function by fostering ongoing alliances among the full range of educational and cultural institutions of the State. The Regents Advisory Council on Learning Technologies, comprised of experts representing all of our educating institutions, will serve a major role in this activity.

What follows is an overview of the implications of the learning technologies for the goals of excellence, equity, and efficiency.

## II. IMPLICATIONS FOR THE LEARNING TECHNOLOGIES AND TELECOMMUNICATIONS IN ACHIEVING THE GOALS OF EXCELLENCE, EQUITY AND EFFICIENCY: AN OVERVIEW

### Excellence

The need to promote and maintain high quality and standards in all educational and cultural institutions in New York State is a priority goal of the Regents and a focal concern of each Program Office within the Department. The computer, the interactive videodisc, and broadcast telecommunications technologies are important resources for strengthening educational programs and services. The action recommendations proposed in this document support Regents initiatives to strengthen all facets of the educational system.

The role of the technologies in improving the quality of educational and cultural programs has been acknowledged. However, there is concern that technologies cannot provide solutions to all educational problems. They should not be imposed without sensitivity to institutional and societal barriers. These barriers include the following:

o Institutional Barriers The interactive technologies must be designed for ease of integration into the programs and services of the schools, colleges, libraries, museums and other educational and cultural institutions. This will be

particularly important for educational institutions which might have to adapt curricula, schedules, and classroom organization in order to employ these technologies effectively. In addition, attention will have to be given to the laws and regulations under which these institutions operate.

- o Inadequate Staff Development Widespread use of technology will require that teachers and other professionals be trained both in its use and in the production of high-quality curriculum materials.

- o Lack of Adequate Software With few exceptions, the quality of software required for schools, libraries, colleges and rehabilitation programs is limited. The development of high quality technology materials is critical since the use of technology is directly correlated to availability and quality of materials.

- o Skepticism About Long-Term Effects Educators and other professionals are seriously concerned that the long-term effects of substituting technology for traditional teaching methods are not sufficiently understood.

The Department has begun to address these issues through a national effort of the Council of Chief State School Officers which has identified and convened State Education Agency representatives to explore cooperative efforts that reduce the inhibiting effects of these barriers.

Equity

The New York State Education Department has continually supported the need to maintain access to educational and cultural services for all residents of the State. Special efforts have been undertaken to assure equity for certain population groups who have not actually benefited from these resources. The Department has proposed continued support of a number of program initiatives to address the special needs of low-income, minority, and non-English-speaking populations; children-at-risk; adult learners; parents; handicapped parents; out-of-school youth; and unemployed adults. The "Regents Action Plan to Improve Elementary and Secondary Education Results in New York State" urges that curriculum goals and standards apply to all students and seeks to ensure equity in the availability of resources to provide each student the opportunity to reach or exceed standards. The Department has also addressed equity concerns in postsecondary education by stressing the issue of increasing the number of economically disadvantaged and minority students and of women who participate in and complete undergraduate and graduate programs in scientific and technological fields. In the area of cultural education, the Department has emphasized that full utilization of libraries, museums, historical organizations, and public television and radio will provide equity of access to information in an age when

increased opportunity may depend on this access. Finally, the Department has recommended continued support for programs and services which assist physically and mentally disabled persons to acquire a capacity for productive work through Independent Living Centers and other similar programs.

Specific to the enhanced opportunities potentially afforded by the learning technologies and telecommunications, the Department is aware of the inequities of access to this enhanced potential related to low-wealth, has collected data that can inform policy, programs, and legislative action, and will immediately pursue action (see Recommendation #11) to address this discrepancy and monitor progress toward its elimination.

Efficiency

The need to ensure efficiency in the use of educational resources and greater effectiveness in general within our educational and cultural systems is a national concern and priority goal of the Department. Interactive technologies are both an important educational resource and a means of achieving enhanced efficiency.

The New York State Education Department is committed through each of its specific recommended actions to (1) employ interactive technologies, such as electronic data base searching, office automation, networking and teleconferencing, to achieve greater efficiency, (2) use technologies themselves efficiently, and (3) foster the implementation of the technologies to support the Department goal of having educational and cultural institutions provide a significant and vital contribution to improving New York State's economic vitality.

## III. GOALS AND ACTION RECOMMENDATIONS

Excellence

Goal: To employ learning and telecommunications technologies in support of enhanced standards and quality for New York's cultural and educational institutions by supporting the major plans for education in New York State, such as the Regents Action Plan to Improve Elementary and Secondary Results in New York, The Regents Statewide Plan for the Development of Postsecondary Education in New York State, 1984, Comprehensive Plan for the Office of Vocational Rehabilitation, and The Regents Long Range Plan for the Office of Cultural Education.

Action Recommendations

Recommendation 1:

The Department will develop a process for creating a learning technologies and telecommunications research and development agenda. The agenda developed will serve as a basis for seeking State, Federal, foundation and commercial support for

innovative developmental projects as well as operational pilots.

Recommendation 2:

The Department will develop a policy and systematic plan of priority "producer/consumer" forums to provide for ongoing participation of Department and field staff in the development of learning technology materials in a variety of media formats. The main goal of these collaborative forums is to enhance the quality of materials and systems to ensure a "match" with the content and pedagogical concerns of educators and professionals at the local, regional and State levels.

Recommendation 3:

Appropriate Department offices will encourage the review of certification programs to determine whether they should be changed to assure that minimal competencies and knowledge about the uses of the learning technologies are included in certification requirements.

This is consistent with the recent recommendation of the Teacher Education, Certification, and Practice Board that "Colleges...include experiences in teacher preparatory programs that will ensure that graduates of teacher preparatory programs are aware of developing technology, able to use it in instruction, and (are) sensitive to its impact on pupils; and to provide staff development for faculty that will ensure a continuing awareness of the impact of technology throughout the teacher preparatory program."

Recommendation 4:

Model learning technology staff development programs will be developed by the Department. These programs will be delivered in targeted program areas to train a variety of educational and cultural professionals to ensure that the technologies are employed to enhance the standards and qualities of educational and cultural programs. These models will address the competencies and knowledge required for professionals to integrate the full range of appropriate learning technologies within their respective disciplines and program areas.

Recommendation 5:

The Department will develop new alliances and expand current relationships with national, state, and regional organizations to share information about high quality learning technology opportunities and resources and will develop a long-range agenda of priority collaborative projects to be undertaken with these various organizations.

The Council of Chief State School Officers (CCSSO) and the Northeast Regional Exchange, Incorporated (NEREX) are representative examples of organizations with whom the Department has cooperated on technology initiatives.

## Equity

Goal: To ensure that technology, its applications, and instruction in its use within education are available to all on an equitable, nondiscriminatory, and nonstereotyped basis.

### Action Recommendations

#### Recommendation 6:

The Department will focus learning technology and telecommunications efforts on institutions in need such as those school districts in the lowest ranking 10-15 percent on the Pupil Evaluation Program Tests in reading and mathematics, the preliminary competency test in reading, the Regents competency tests in reading, writing, and mathematics; and those with high drop-out rates. It will seek to apply technology for teaching adult basic skills in order to improve the ability of libraries, colleges and other institutions to serve the educational needs of low-income, minority or disadvantaged populations.

#### Recommendation 7:

The Department will work with hardware and software producers to address the development and introduction of computer peripherals and software that will enable the physically handicapped, the learning disabled, and the developmentally delayed learners of New York State to gain access to and effectively use learning technologies.

#### Recommendation 8:

In order to increase access for all to training programs, including those programs that are curriculum-oriented and designed to end stereotyping and sex biases, the Department will work with appropriate field organizations in the development of appropriate staff development programs. This will also include the development of training models capable of replication throughout the State with a focus on institutions serving low-wealth or minority populations.

#### Recommendation 9:

In order to assess and monitor the efforts to achieve a more equitable distribution of learning technology and telecommunications capacity, the Department will:

- Implement a planned agenda of survey research related to telecommunications, local video and computing capacities to determine needs and provide summary data reports to support the development of bias-free learning programs and to assess distribution of interactive learning resources.

- Immediately implement an annual data collection procedure to closely monitor the progress being achieved by the actions targeted on achieving equitable access and applications of the learning technologies and telecommunications capacities.

Recommendation 10:

Arrangements for statewide volume price discounts for quality learning technology hardware and software will be undertaken by the Department to ensure that there is greater access for all of New York's citizens to these technologies.

Recommendation 11:

To help ensure that there is full and equitable access to the technologies for all, the Department will recommend new or amended legislation for 1986-87 that (a) addresses enhanced access to the technologies (hardware, software, and telecommunication capacity) and (b) increases the ability to effectively apply them through provision of targeted staff development, planning, and technical assistance for low-wealth school districts, postsecondary institutions, and other educational and cultural institutions serving low-wealth and minority populations.

Efficiency

Goal: To promote efficiency in the use of resources and greater effectiveness in general within educational and cultural systems through the implementation of appropriate learning and telecommunications technologies.

Action Recommendations

Recommendation 12:

The Department will expand its capacity for identifying and transferring appropriate and promising technological developments and applications from the military, industrial, and non-profit sectors that have implications for enhancing the efficiency of New York's educational and cultural institutions. This will be accomplished via the identification of exemplary programs and the transfer of these and other emerging technologies and developments from other sectors.

Recommendation 13:

Legislation and regulations will be proposed to encourage private sector investment in learning technology products and services that directly benefit the educational and cultural programs of the State. The following principal activities will be considered:

- The introduction of tax incentives to stimulate private sector investments and appropriate software and hardware development (including resources for research and development) and,

- The development of policy and procedures related to copyright protection of software and other easily copied forms of media and materials used for research instruction or instructional-support purposes.

Recommendation 14:

The State Education Department will seek additional legislative support for the provision of financial incentives to enable educators and other professionals to take advanced training and pursue project development activities related to the integration of the technologies for increasing overall efficiency within their respective fields. The types of training and inservice activities that need to be addressed should include, but not be limited to, the following:

- Advanced training and project development activities designed to support K-12 teachers and college faculty in the use of interactive program effectiveness.

- Orientation and training programs specifically designed to support enhanced instructional management requirements of the Regents Action Plan.

- Provision of advanced training for librarians, museum specialists, and media specialists in the use of technologies such as library automation, telecommunications, networking, video applications, for enhanced efficiency in the delivery of service.

- Provision of programs specifically designed to train the providers of instructional services to special needs populations (e.g., Handicapped, Vocational Rehabilitation, Corrections, Gifted) in the use of appropriate learning technologies to enhance the efficient delivery of learning experiences and educational/cultural resources to these groups.

Recommendation 15:

- A comprehensive study must address current and planned telecommunications capacities and the implementation of a telecommunications network which might be used by all State agencies in a cost-sharing arrangement. Also, the Department will continue to pursue a close relationship with State and local telecommunications efforts, such as those of the Urban Development Corporation, to ensure high level, comprehensive state telecommunications study and planning.

## IV. NEXT STEPS

These goals and action recommendations provide a context for the Department to begin a process of reviewing current activities and developing specific initiatives and timelines for their implementation.

This will occur through the Education Department's Technology Task Force and the Regents Advisory Council for Learning Technologies. Every effort will be made to focus on initiatives that have cross-Department implications and to identify specific actions in order to inform budgetary and legislative considerations for the 1986-87 Fiscal Year.

The process leading to the development of these recommendations has provided significant direction for overall Department action relative to Learning Technologies and Telecommunications. It has also clarified and refined the role of the Center for Learning Technologies as serving the following Department functions relative to the further evolution of a comprehensive Department technology and telecommunications program:

- Learning technologies and telecommunications policy coordination, legislation review, and interagency relationships to ensure they take into account the goals and issues identified.
- Coordination of collaborative relationships within the Department and with external profit and non-profit organizations.
- Provision of requested technical assistance relative to purchase and planning for the application of appropriate technologies.
- Provision of staff development and development of models to enhance professional competencies in the use of effective technology in educational and cultural settings.

- Dissemination of information related to new and emerging technologies and their implications for education, research and exemplary applications.

These functional responsibilities are consistent with the original charge to the Center. They have been refined over the last two years and take on a new vitality in light of the recently approved plans of the Department's four major program offices.

Department program offices will be preparing legislative program recommendations, budget and work plan recommendations for FY 1986-87, beginning in May, 1985. These offices will be including implementation of both the goals and recommendations in this Department Plan within their submissions to the Board of Regents and a summary document representing these Department initiatives will be prepared.

<u>The Office of Elementary, Secondary and Continuing Education will emphasize:</u>

- Development of policies, procedures, and monitoring activities to ensure that learning technologies are available to all elementary and secondary students on an equitable and nondiscriminatory basis.

- Use of learning technologies, particularly productivity tools, to improve achievement within each curriculum area.

- Use of learning technologies in staff development activities for Department and school personnel throughout the State.

- Improvement in the use of telecommunications in school management and instructional delivery systems.

- Review of appropriate technologies for use in student testing.

- Identification, evaluation, and dissemination of promising applications of technology in education.

<u>The Office of Higher and Professional Education will emphasize:</u>

- Necessary learning technology skills required of those seeking teacher certification.

- Enhancement of training in the learning technologies at Teacher Resource and Computer Training Centers and other pre-service or teacher training programs.

- Increased support for the purchase of equipment and networking for research and instruction.

- Funding of cooperative efforts electronically linking academic and research libraries with one another and with

other special libraries to promote a wide range of access to resources.

The Office of Cultural Education will emphasize:

- Use of information technologies to improve the existing interlibrary loan and communications systems, connecting academic, public, special and school libraries.
- Use of interactive and information technologies for the development of regional cultural networks to support scientific and cultural research efforts in the State's museums, libraries, archives and historical societies.
- Development and application of technology to serve public television, radio and educational cable services in both program delivery and management.

The Office of Vocational Rehabilitation will emphasize:

- Advancement of adaptive technologies to enable individuals with disabilities both to learn and to participate in competitive employment.
- Use of the information technologies in order to expand the employment opportunities for the homebound disabled.
- Application of technologies and telecommunications to enhance efficiency and effectiveness of research and service delivery.

The Regents will have the opportunity to judge each of the applications of the learning technologies against the Department Plan when they approve their State legislative program and budget requests on an annual basis.